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A BOTANIST IN SOUTHERN CALIFORNIA.

BY JOSEPH F. JAMES.

HE who would see California at her best, should come here in the spring. If the traveler arrives about the middle of March, he will find the spring in all its beauty and freshness. After his passage over the snowy Sierra, he will be delighted at the change from ice and snow to green grass and flowers; from cold and cutting northern winds to gentle balmy southern breezes. The sky will appear of a brighter blue, and the grass of a greener tinge than he ever saw before, and he will feel a vigor and a freshness which he has not felt in many a long day. There seems to be a something in the air of California which makes it different from what it is elsewhere. It may be that it is possessed of more ozone than common, and the presence of that material freshens up one's thoughts and feelings. The rains of the winter season will then be over, and the grass and flowers will be seen in all their verdure and freshness. On the other hand, should he arrive in the summer, he will find everything dried and parched; and as first impressions are always the most lasting, it is likely that he will have a much poorer opinion of the country than if he had seen it first in all its beauty.

To a botanist, California is almost a paradise, and although he will not find in it much of that magnificent vegetation, and those grand and interminable forests which are characteristic of the tropics, we venture to say that he will find here as many, or nearly as many, curious and interesting forms of vegetable life as he can find in any other country of the world. The distribution of rain during the year has been the cause, at least in Southern California, of a peculiarity in the development of vegetable life. Rain falls only from November to March, and the remainder of the year is dry and hot. By the middle of June or July many of the plants and flowers have disappeared; the grass is dry and parched, and the whole country assumes an appearance which is extremely depressing. Most all the flowering plants appear, therefore, in the spring, and it is almost next to useless to hunt for them, except along the banks of streams and in deep shaded cañons, after the first of June.

But the spring! Ah! that is the time. It would be almost impossible to find a more beautiful sight than is then visible in

the vicinity of Los Angeles, the metropolis of Southern California. Then the plains surrounding that city, the hills and the valleys are one mass of gorgeous brilliant flowers. They are there by thousands upon thousands, and of almost endless variety. We shall attempt to enumerate some of them, and give a general idea of the appearance of the country in its season of beauty.

Most conspicuous of all, both for its abundance and its color, is the California poppy (*Eschscholtzia californica* Cham.). Never have I seen such a brilliant mass of color as was presented by this plant last spring. It covered acres of ground, and the bright golden yellow or orange of its flowers, conspicuous among the mass of other verdure, was visible for miles. I have one patch in my mind now which, seen on a bright clear day, was, with the sun shining full upon it, too dazzling for the eye to gaze upon. Truly it was the "Field of the Cloth of Gold." In places where the ground had been plowed, paths of it had been left, and they seemed like tongues of fire running over the ground.

Two species of Alfillella, or pin clover (*Erodium cicutarium* L'Heer and *E. moschatum* L'Heer), are very common. These are very valuable as forage plants, and without them it is hard to tell what the country would do. Both species are very similar, one having the leaves more finely dissected than the other. The flowers are small and of a bright purple. The seeds are peculiar. After the petals have fallen the pedicels become deflexed, but the seeds still stand upright. They are five in number, united to a stylus, and each one is furnished with an awn an inch or so in length, with hairs at the base. When the seeds ripen and dry, they split the capsule at the base, and each one begins to twist on its own account; when they get through, the awns of all are closely twisted together, and the seeds stick out on all sides. If one seed is separated from the others before it is fully ripe, and examined, the awn will be seen to twist. It dries very rapidly, and in the contraction turns the seed round and round till a close coil about half its length is formed, and this coil sticks out at right angles from the seed. On wetting the awns again, they will untwist and become as straight as before. This seems to me to be a provision of nature for forcing the seed into the ground. Be that as it may, the seed itself is very hard and sharp pointed, and has a faculty of sticking very close to anything it gets into.

The *Sidalcea malvæflora* Gray, is one of the prettiest and com-

monest of the plants of the plains. It grows from one to two feet high, and has the large purple flowers interruptedly ranged on the stem, with the round cordate and crenate leaves at the base. *Platystemon californicus* Benth., known as cream cups, is very common. The flowers are white or cream colored, and are raised on naked hairy peduncles four to six inches long, looking something like an Anemone. *Dodecatheon meadia* L. (var ?), the shooting star, common in the East, is occasionally seen, and with its pretty and curiously shaped flowers reminds one of the rocky banks and shady ravines where it finds its Eastern home. Several species of *Orthocarpus*, with small curious purple flowers, are common; one species (*O. purpurascens* Benth.) is small and inconspicuous in itself, but it grows in dense masses, covering the ground for miles, and giving it a purplish hue. The *Bæria gracilis* Gray, a small composite plant with bright yellow flowers, is so common as to cover acres of ground and add its quota to the general glory. *Sayia platyglossa* Gray, is also common; its yellow flowers tipped with cream color. Occasionally a patch of *Pæonia brownii* Dougl., greets the eye with its large dark purple or reddish flowers, and heavy thick bright-green leaves. The poor man's weather glass, or pimpermell (*Anagallis arvensis* L.), with its bright pinkish flowers, is common in cultivated grounds. *Collinsia bicolor* Benth. with bright purple flowers, hides itself modestly under greasewood bushes and sage brush. *Castilleja passiflora* Bong., with its flaming scarlet flowers, looks, in the distance, like the *Lobelia cardinalis*, that beauty of the swamps and meadows of the East. *Penstemon cordifolius* Benth., and *P. centranthifolius* Benth., adorn the banks of streams with their scarlet flowers. In shady places the tall green *Scrophularia californica* Cham., similar to *S. nodosa* L., towers far above the low but pretty *Claytonia perfoliata* Donn., with its raceme of white flowers. This last delights in damp shady places, and in such localities it is very common. *Salvia carduacea* Benth., is common in dry sandy soil, as is also *S. columbariæ* Benth., with its cluster of blue flowers. The *Amsinckia spectabilis* Fisch and Meyer, a small inconspicuous plant with yellow flowers, is so common as to cover acres of ground. Two species of *Phacelia* (*P. ramossissima* Dougl. and *P. tanacetifolia* Benth.), with white and blue flowers, are common, while their near relative, *Nemophila aurita* Lindl., with pretty blue flowers, and weak in the stem, helps to raise

itself above the ground by climbing with its prickly stem up other plants. *N. insignis* Dougl., also with blue flowers, is very pretty and common, and is one of the earliest spring flowers.

The species of *Gilia* are very numerous, and many of them have such differently shaped flowers, and such varied habits of growth that a novice would never place them in the same genus. There is the *G. californica* Benth., which has large funnel-shaped purple flowers, and leaves awl-shaped and bristle-like, and grows into quite large bushes. As an opposite is the *G. intertexta* Steud., a dwarf form of which has small white flowers, and forms a mat spread out close on the ground. Then the *G. multicaulis* Benth., with its short upright stem, and small bunch of purplish flowers is very different from the *G. densifolia* Benth., with a white wooly stem, linear pointed leaves and large bright blue flowers in dense clusters.

The *Convolvulus occidentalis* Gray, with its large white flowers, twines over the ground and bushes. Though the Liliaceæ are not numerous in species, there is one, *Calochorus splendens*, which is very handsome. The flower is quite large, of a purple-blue color, raised on a long slender stem, and as it waves to and fro in the air, it well merits its name of "splendens." *Datura meteloides* D.C., common on the roadsides, quite puts to shame its relative the "Jamestown" weed, of the East. It has large white flowers, six and eight inches long, and forms a bush two or three feet high. It possesses none of that vile odor peculiar to the "Jamestown," but has rather an agreeable smell. *Mirabilis californica*, one of the Nyctaginaceæ, is common all over the hills, and has viscid, sticky leaves and stem, and bright purple salver-shaped flowers. *Euphorbia albomarginata* forms large mats on the ground, one plant sometimes covering very closely a space two feet in diameter. *Sisyrinchium bellum* takes the place of the Eastern *S. bermudiana*, which it very much resembles.

One of the handsomest plants I have ever seen anywhere, is the *Yucca whipplei* Torr., commonly known as the Spanish bayonet, and it is quite common around Los Angeles. Never shall I forget the sensation I felt the first time I saw this beautiful plant. We were riding up a cañon, near San Juan Capistrano, toward the warm sulphur springs, when off to our right appeared a tall mass of white. What it was we could not tell, but riding toward it, we soon had it revealed to us in all its beauty and

majesty. Imagine a stalk ten or fifteen feet in height, two inches in diameter at the base, branched like a candelabra and covered for six or eight feet of its height with a mass of cream-colored, bell-shaped, drooping flowers. At the base the long, sharp, serrated leaves stuck out on all sides, as if to guard against the approach of any injurious animal. When seen standing along the mountain side, its white mass of blossoms outlined against the dark background of the naked rock, it looks like a sentinel keeping guard over the valley; and numbers of them ranged one after another, and one above another, looked like a troop of soldiers placed there to stand guard. They grow in such steep and inaccessible places oftentimes that it is impossible to get at them. As it gets old the leaves become frayed at the edges, and the fibers hang like long filaments down each side of the leaf.

Ranunculus californicus Benth., is very common in wet and damp places, and *R. cymbalaria* Pursh., grows in great profusion in the sand on the bank of the Los Angeles river. *Viola pedunculata* Torr. and Gray, with its pretty yellow and black flowers, is conspicuous amid the flowers of the plains, and *Nasturtium officinale* R. Br., almost blocks up the water of slow-flowing and shallow streams. It grows in shady places, sometimes three feet high, and in such dense masses as to make it difficult to force one's way through it. *Vitis californica* Benth., the only representative of the Vitaceæ in California in a wild state, is common, and climbs high over the willow hedges and bushes in damp localities. The deadly *Rhus diversiloba* Torr. and Gray, own cousin to *Rhus toxicodendron* L. of the East, is too common all over the plains, hills and cañons of Southern California, and while some persons can handle it with impunity, others barely touching it are afflicted with a severe cutaneous eruption. *Tellina cymbalaria* Gray, is a very pretty little plant with radical leaves and a cluster of white flowers on the end of a long scape. It grows in damp shady places, and is very common.

There are several genera which are very common all over California, and many of the species resemble each other so closely as to be nearly undistinguishable. Among the Leguminosæ, for instance, the genera *Lupinus*, *Hosackia* and *Astragalus* are all large. The species of the last are very numerous, and so closely connected as to cause great trouble in separating them. Nearly all the species have white or yellow flowers, pinnate leaves and

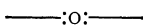
bladdery pods. The rattle weed is one of them, and is so named because the dry pods swept over the ground by the wind make a noise like the rattlesnake's warning. Another is the Loco plant, a terror to owners of horses and cattle. It is said that when eaten by animals it acts like a slow poison. A horse, for instance, seems to be affected in the brain; he becomes stupid, easily frightened at any little object coming suddenly before him, is inclined to run away, and often goes mad, insane, and to wind up all, dies from its effects. A locoed horse can easily be detected by the dull stupid look in his eyes. Among the lupines there are some of our most gorgeous flowers. The shrubby species often grow four and five feet in height. The *L. rivularis* Dougl., has large bright green leaves and spikes of bright blue flowers, often two feet in length. As an antithesis to this there is the *L. micranthus* Dougl., which is from four to eight inches high and has small white or blueish flowers. The *Hosackias* are sometimes bushes four to six feet high, and sometimes lie flat on the ground, the stems of a single plant being three to five feet long. The flowers are generally yellow, and the leaves small and three-parted.

Along all the roads, and covering the ground otherwise devoid of vegetation, we see the mock orange (*Cucurbita perennis* Gray); the flowers are quite large and yellow, leaves very rough and scabrous, and the fruit hard; round and yellow, looking like an orange. The root extends into the ground three or four feet and is sometimes as big round as a man's body. The *Megarrhiza californica* Torr., another species of the Cucurbitaceæ, twines over the rocks and bushes in a luxuriant manner; it has long tendrils which are slightly sensitive; when rubbed on one side, they soon bend toward that side and twine round any support they may happen to touch. Along in July the *Clematis ligusticifolia* Nutt., with its panicles of white flowers or carpels with long silky tails, climbs over shrubs and into trees along the water courses. *Brassica nigra* Boiss, the common mustard, is one of the most pernicious weeds of the whole of Southern California, and it covers the ground in many places for acres, to the entire exclusion of other plants. Sometimes it is eight and ten feet in height and two or three inches in diameter at the base. I have ridden through fields of it early in the spring when it was as high as the saddle on the horse. *Malva borealis* Wallman, is another very troublesome weed, and grows everywhere round houses and

in waste ground; in old sheep and cattle corrals it is especially luxuriant, and grows sometimes so thick and strong that even a horse has difficulty in forcing his way through it. It closely resembles *M. rotundifolia* L.

Several genera of Onagraceæ are abundant in species and specimens, *Ænothœra* and *Godetia* being the most abundant. A small plant belonging to this order, *Clarkia elegans* Dougl., is found in shady cañons, and is remarkable for its queer-shaped, handsome, purple flowers, and is often cultivated. The *Zauschneria californica* Presl., has bright red flowers, and adorns dry banks and hills in the summer. *Isomeris arborea* Nutt., one of the Capparidaceæ, is a small shrub with yellow flowers and inflated pods, and is very common near San Diego, flowering in November. A species of *Hydrocotyle* is very common in slow-flowing streams, and its circular crenated leaves seem to float on the water, and amongst them are thousands of specimens of *Azolla americana*, covering the surface of the water with its green mantle for considerable spaces.

I have confined my attention in this article almost entirely to the herbs and shrubs, and have by no means exhausted the list of them. Species are very numerous in Southern California, and I may, another time, have something to say in regard to the trees and larger vegetation generally of the country.



PROGRESS OF AMERICAN CARCINOLOGY IN 1879.

BY J. S. KINGSLEY.

AMERICAN science, when compared with that of Europe, does not present a very creditable appearance. In the physical sciences almost every country of the old world is far ahead of the United States. With geology it is about the same, while in biology, American work, with a few conspicuous exceptions, has not surpassed a low state of mediocrity. The pages of the numerous scientific journals are filled with descriptions of new species, faunal lists and even worse nonsense, while anatomical and embryological papers are few and far between, and even then the majority of them are fragmentary and abound in errors of observation. In the philosophy of biology, America has done almost nothing. It is not the place in an article of this series, to insti-